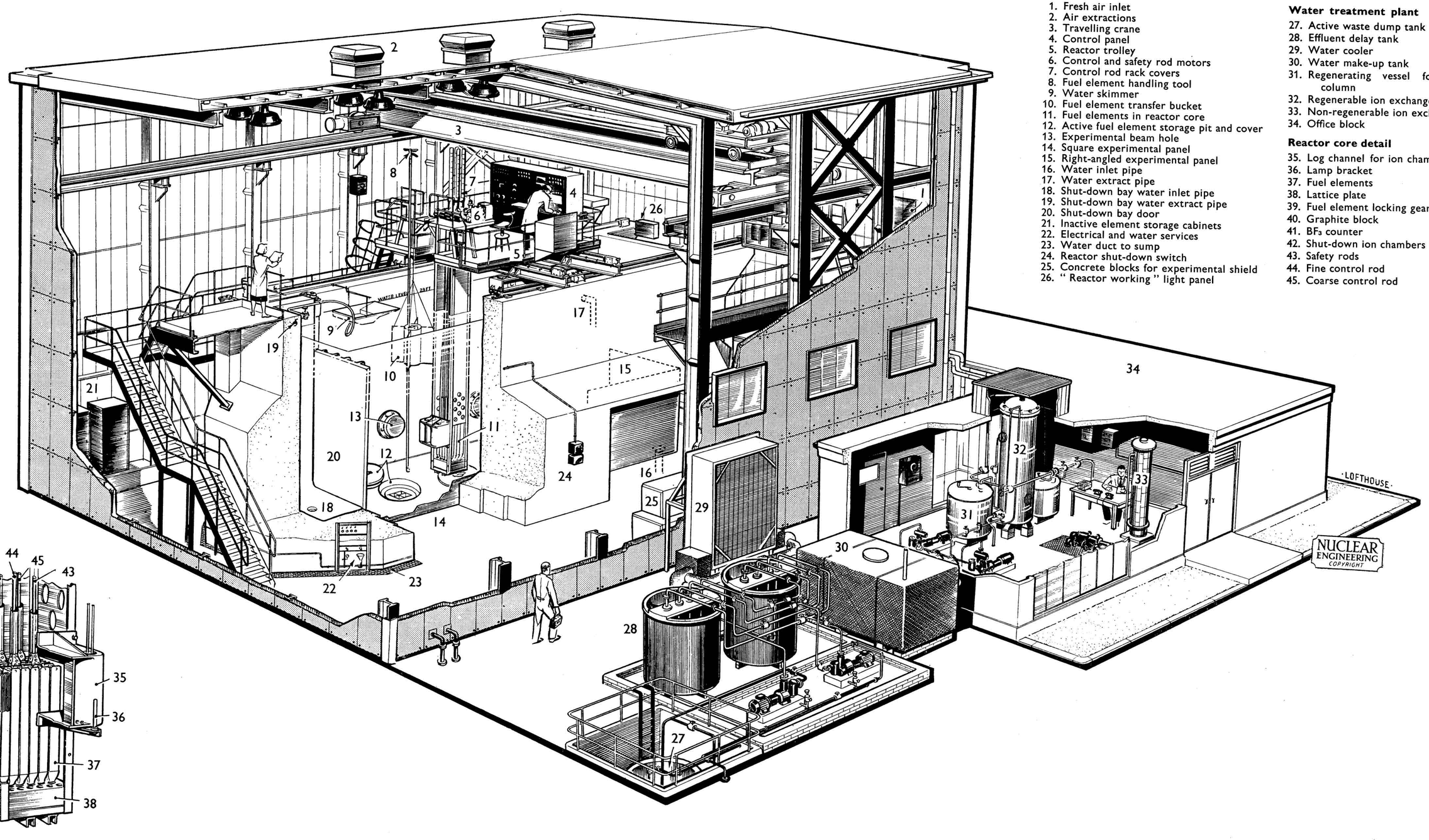
The World's Reactors

No. 15 LIDO



KEY

1. Fresh air inlet
2. Air extractions
3. Travelling crane
4. Control panel
5. Reactor trolley
6. Control and safety rod motors
7. Control rod rack covers
8. Fuel element handling tool
9. Water skimmer
10. Fuel element transfer bucket
11. Fuel elements in reactor core
12. Active fuel element storage pit and cover
13. Experimental beam hole
14. Square experimental panel
15. Right-angled experimental panel
16. Water inlet pipe
17. Water extract pipe
18. Shut-down bay water inlet pipe
19. Shut-down bay water extract pipe
20. Shut-down bay door
21. Inactive element storage cabinets
22. Electrical and water services
23. Water duct to sump
24. Reactor shut-down switch
25. Concrete blocks for experimental shield
26. " Reactor working " light panel

Water treatment plant

27. Active waste dump tank
28. Effluent delay tank
29. Water cooler
30. Water make-up tank
31. Regenerating vessel for ion exchange column
32. Regenerable ion exchange column
33. Non-regenerable ion exchange column
34. Office block

Reactor core detail

35. Log channel for ion chamber in lead shield
36. Lamp bracket
37. Fuel elements
38. Lattice plate
39. Fuel element locking gear
40. Graphite block
41. BF_3 counter
42. Shut-down ion chambers in lead shield
43. Safety rods
44. Fine control rod
45. Coarse control rod

The World's Reactors

No. 15 LIDO

TYPE: Swimming pool.

PURPOSE: Shielding and other medium flux expts.

LOCATION: A.E.R.E. Harwell.

OPERATION: September, 1956.

RATING: 100 kW.

FUEL:
Uranium enriched to 46% U^{235}.
U–Al alloy, Al clad.
Critical investment: 3.25 kg U^{235}.
Normal investment: 3.35 kg U^{235}.

ELEMENTS:
M.T.R. type with 13 plates/element.
Critical loading: 26–27 elements.
Active length: 24 in.
Each plate: 24 in × 2.875 in × 0.076 in, including 0.020 in thick Al cladding.
Space between plates: 0.124 in.

LATTICE:
Regular square, pitch: 3.025 in.
No. of lattice plate positions: 36.

MODERATOR: Light water.

REACTIVITY: Normal loading: 1% δk excess.

FLUX:
At 100 kW, central: $10^{12} n_t/cm^2,s$,
$1.5 \cdot 10^{12} n_f/cm^2,s$.
γ dose at core edge: 10^6 r/h.

CONTROL:
Four plates, 2 safety, 2 control.
Material: S.S. clad Cd.
Location: moving in central gap in special elements, plates on each side Al only.
Reactivity control, safety: 1.5% each, coarse: 1.5%, fine: 1%.

DRIVE:
Fine rod: variable speed motor.
Coarse and safety rods: constant speed motors.
Max. rate of increase in k: 0.01%/sec.

COOLANT:
Light water, natural convection through core.
Tank circulation through cooler: 2,000 gal/h.
Max. operating temp. 40°C.
Purification: 200 gal/h through regenerable ion exchange column.

MAIN TANK:
Material: concrete.
Internal dimensions: 28 ft × 8 ft × 24 ft deep.
Water depth: at 23 ft.

SHIELDING:
Upwards: 17 ft water.
Sides: 7 ft Portland cement.

EXPERIMENTAL FACILITIES:
L-shaped panel with two faces: 8 ft × 8 ft.
Square panel: 8 ft × 8 ft.
Panel details: two $\frac{1}{2}$-in Al plates, 2 in apart, separated by water and egg-box stiffener.
3 beam holes: 1 ft dia.

CONTAINMENT:
None.
Reactor located in catchment area.

Data sheets in this series already published in "Nuclear Engineering" are:

No. 1. *BEPO* (*April*, 1956)
No. 2. *CP5* (*May*, 1956)
No. 3. *NRX* (*June*, 1956)
No. 4. *DIMPLE* (*August*, 1956)
No. 5. *ZEUS* (*September*, 1956)
No. 6. *CALDER HALL* (*October and December*, 1956)
No. 7. *RUSSIAN* 5 *MW* (*November*, 1956)
No. 8. *DIDO* (*January*, 1957)
No. 9. *THE SOUTH OF SCOTLAND ELECTRICITY BOARD STATION* (*February*, 1957)
No. 10. *BERKELEY POWER STATION* (*March*, 1957)
No. 11. *BRADWELL POWER STATION* (*April*, 1957)
No. 12. *DOUNREAY FAST REACTOR* (*June*, 1957)
No. 13. *EBWR* (*July*, 1957)
No. 14. *RWE* 1 (*September*, 1957)